

### **THE OFFICE ACTION**

In the Office Action dated November 30, 2004, the Examiner rejected Claim 21 under 35 U.S.C. 112 and objected to Claim 12 under 37 CFR 1.75(c). The Examiner rejected Claims 19, 21 and 22 as being anticipated by JP 11-145519 to Komoto (hereinafter Komoto). The Examiner rejected Claims 1-6, 11, 13, 16, 17 and 20 as being unpatentable over Komoto in view of U.S. Patent No. 5,602,444 to Jansma (hereinafter Jansma '444). The Examiner rejected Claims 14 and 15 as being unpatentable over Komoto in view of U.S. Patent No. 5,838,100 to Jansma (hereinafter Jansma '100).

### **REMARKS/ARGUMENTS**

Applicants respectfully request reconsideration of the application in light of the above amendments and the following comments. Claims 1-6, 8, 11, 13-17, and 19-22 remain pending in the application.

In accord with the Examiner's suggestions, Applicants have amended Claim 21 to overcome the defect. Applicants have cancelled Claim 12. Accordingly, withdrawal of the rejection/objection of these claims is requested.

Applicants have amended Claims 19, 21 and 22 to include the limitation "alumina". Applicants submit that the above amendments do not raise new matter as support for the amendments can be found in the dependent claims and the specification as originally filed. Applicants submit that no claim is anticipated by Komoto. As noted by the Examiner on Page 6 of the Office Action, "Komoto fails to teach or fairly suggest the UV reflecting material comprising alumina". All claims presently require alumina and are, therefore, not anticipated by Komoto.

Regarding claims 1, 11, 14, 15 and 19, Applicants respectfully disagree with the Examiner's assertion that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the alumina reflecting material of Jansma for the UV reflecting material of Komoto".

Applicants respectfully submit that, when one of ordinary skill in the art reviews Komoto and Jansma '444 in the absence of the hindsight provided by the present application, the divergence between them is so substantial that "the teachings of Jansma" would not necessarily lead to modifying Komoto to utilize alumina. In fact, one of ordinary skill in the art would actually be led away from substituting "the alumina reflecting material

of Jansma for the UV reflecting material of Komoto". The following evidence supports this conclusion.

First, the chemical properties of the reflecting materials are different. The reflecting material of the Jansma fluorescent lamp should be chemically inert so that it can withstand the harsh condition inside a discharge tube. (Line 25, Column 1 of Jansma '444) This inert chemical property is not required by Komoto. Similarly, there is no reason to expect that the alumina coating of Jansma would function as an element disposed on a semiconductor material, at elevated temperatures or within the epoxy encapsulant of Komoto.

Second, the functions of the reflecting materials are different. The Komoto reflector functions as a cut-off filter or a band-pass filter. (Drawing 2 description, English translation of Komoto). Per Jansma, the main alumina function is reducing mercury consumption, reducing end discoloration, and providing a chemically inert boundary between phosphor layer and glass. (Lines 11-26, Column 1 of Jansma '444) UV reflection is only a secondary function. Accordingly, the skilled artisan would find no motivation to employ alumina where a chemically inert boundary is not important.

Third, the qualified reflecting materials for Komoto and Jansma are very different. The Komoto reflector is a total reflection mirror made of metal, dichroic mirror, UV-cut mirror, Bragg mirror, and 26), titanium oxide ( $\text{TiO}_x$ ), or zinc oxide ( $\text{ZnO}_x$ ). When listing compounds that may be used to make the reflector, Komoto teaches many **aluminum** compounds and many **oxide** compounds, however, he omits **aluminum oxide** (alumina). Accordingly, absent any similarity in the type of materials employed, a suggestion for the substitution is lacking.

Fourth, processing of the reflecting material is different. Unlike Komoto, Jansma requires that processing of alumina involves a water vehicle, dispersing agent such as ammonium polyacrylate, and heating. In contrast, Komoto does not require these conditions. Please see Lines 53+, Column 2 of Jansma '444. The barrier layer is provided on the lamp as follows. The gamma alumina and alpha alumina particles are blended by weight. The particles should be substantially pure or of high purity substantially without light-absorbing impurities or with a minimum of light-absorbing impurities. The alumina is then dispersed in a water vehicle with a dispersing agent such as ammonium polyacrylate and optionally other agents known in the art, the resulting suspension being about 5-15

weight percent alumina and 1-3 weight percent dispersing agent. The suspension is then applied as a coating to the inside of the glass tube and heated, as phosphor coatings are applied and heated, which is known in the art. In the heating stage the non-alumina components are driven off, leaving only the alumina behind:

Per Komoto, the optical reflector RE1 is formed by dispersing titanium oxide ( $\text{TiO}_x$ ) or zinc oxide ( $\text{ZnO}_x$ ) in an appropriate solvent and by coating it on the wavelength converter FL. (Drawing 2) A reflector having the wavelength selectivity is dispersed in a resin and molded into the cup region of the lead frame 2110 to form the inner mold part 2140a. Then, an optically transparent resin is applied around the inner mold part to form the outer mold part 2140b. (Drawing 10) Alternatively, a desired matrix such as solvent, coating material or resin mixed with the fluorescent material and the reflector may be applied into the cup region of the lead frame 2110. By utilizing the difference of the segregating speed between the fluorescent material and the reflector, the fluorescent layer FL and the optical reflector RE1 may be stacked on the light emitting element in this order. (Drawing 10).

In summary, Applicants respectfully submit that both Jansma '444 and '100 are limited to fluorescent lamps and never mention LED or a semiconductor light source, which is an essential part of Applicants' invention. Having read both Komoto and Jansma, a person of ordinary skill in the art is not motivated to substitute Jansma's fluorescent lamp design into a light emitting component comprised of a semiconductor material. Moreover, Applicants submit that in view of the extensive technical differences between a fluorescent lamp and the LED environments, there is no motivation to proceed with the combination asserted by the Examiner. In fact, given the numerous UV reflective materials known to the skilled artisan, the asserted combination is being made in hindsight.

Claims 2-6, 8, 13, 16, 17, and 20-22 are dependent claims from Claims 1, 11, 14, 15 and 19, which have more limitations than their cited independent claims. The claims therefore should be more patentable.

## CONCLUSION


Applicants respectfully request reconsideration of the application in light of the above comments. Applicants submit that all claims are patentable. If there are any issues remaining, the Examiner is encouraged to contact the undersigned in an attempt to resolve any such issues.

If any fee is due in conjunction with the filing of this Amendment, Applicant authorizes deduction of that fee from Deposit Account 06-0308.

Respectfully submitted,

FAY, SHARPE, FAGAN,  
MINNICH & MCKEE, LLP

Date: February 25, 2005

  
\_\_\_\_\_  
Scott A. McCollister, Reg. No. 33,961  
1100 Superior Avenue, Seventh Floor  
Cleveland, Ohio 44114-2518  
216.861.5582

N:\GCRZ\200023\3A\GXW0000080V001.doc